Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

DRAFT
Title V, Operating
Permit: V-08-039
Eastern Kentucky University
Richmond, KY 40475-3102
December 16, 2008
Permit Writer, Esmail Hassanpour

SOURCE ID:	21-151-00007
AGENCY INTEREST:	2820
ACTIVITY:	APE20080001

SOURCE DESCRIPTION:

Eastern Kentucky University (EKU) applied to the Kentucky Division for Air Quality (DAQ) for the renewal of their Title V permit on September 16, 2008. The source, located in Richmond, KY, currently holds operating permit (V-03-025 R2) for the operation of indirect heat exchangers. The facility has three stoker bed coal-fired boilers, two rated at 65.8 MMBtu/hr (emission units 01& 02) and emission unit 04 rated at 84.0 MMBtu/hr, which provide energy to various areas on the EKU campus. Exhaust gasses from the coal burners are directed into a common duct which carries the gasses to a bag house. From the bag house, another duct directs the exhaust gasses through a fan and to a brick stack. Pressure and temperature are monitored on the bag house control panel. Coal is delivered to the boiler operation via truck from the coal storage facility located on campus. The coal is transferred through a vertical conveyor to storage hoppers located above each boiler. Ash is manually removed from the bottom of the stoker and placed in an under-floor conveyor, which moves it to the ash silo. Ash is typically loaded from the silo into trucks and shipped back to the mines via EKU contract with the delivering coal company

A fourth boiler rated at 38.14 MMBtu/hr (emission unit 06), burns only natural gas. EKU has additional twenty eight (28) small boilers rating between 2 MMBtu/hr and 10 MMBtu/hr (emission unit 07-34), constructed before 1972, which burn natural gas and supply heat to the dormitories. Other permitted units include a 0.5 gal/hr paint booth, and significant units including, nineteen (19) natural gas emergency generators, twenty four (24) emergency generators, a woodshop, coal and ash handling operation, seven natural gas kilns and two natural gas melting furnaces. The facility is classified major because potential emission of each regulated air pollutant, nitrogen oxide (NO_x) and sulfur dioxide (SO_2) is greater than 100 ton per year each.

APPLICABLE REGULATIONS:

401 KAR 59:010, New process operations applicable to emissions units commenced on or after July 2, 1975.

401 KAR 59:015, New indirect heat exchangers, applicable to an emissions unit with a capacity of less than 250 MMBtu/hr and commenced on or after April 9, 1972.

401 KAR 61:015, Existing indirect heat exchangers, applicable to an emissions unit with a capacity of less than 250 MMBtu/hr that commenced before April 9, 1972.

401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart Dc, Standards of performance for small industrial-commercial-institutional steam generating units, for units less than or equal to 100 MMBtu/hour but greater than or equal to 10 MMBtu/hour commenced after June 9, 1989.

40 CFR Part 64, Compliance Assurance Monitoring (CAM) (For Particulate Emissions)

NON-APPLICABLE REGULATIONS:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. Permittee has elected to accept voluntary federally enforceable operating and emission limitations to preclude applicability of these standards.

Section 112(j) of the Clean Air Act. Permittee has elected to accept voluntary federally enforceable operating and emission limits to preclude applicability of these standards.

SIGNIFICANT UNITS:

Emissions Unit: 01, 02 & 04 - Three Coals Fired Indirect Heat Exchangers 1960-1967

Pursuant to 401 KAR 61:015, Section 4 (1), particulate emissions shall not exceed 0.35 lb/MMBtu based on a three-hour average.

Continuous Compliance Demonstration Method:
Particulate Emission Rate = [EF] / [coal heating value (MMBtu/ton)].

Emission factor of 0.013 lb/MMBtu or 0.314 lb/ton for the particulate matter shall be used to demonstrate ongoing compliance until new emission factors derived from subsequent compliance testing. The new EF, will replace the emission factor currently listed in this permit, and shall be used to calculate future emissions. Baghouse removal efficiency may be included as a separate variable in the emission rate formula when it is specifically determined by subsequent compliance stack testing and not included in EF.

Pursuant to 401 KAR 61:015, Section 4 (3)(b), emissions shall not exceed forty (40) percent opacity based on a six-minute average except that, for stoker fired indirect heat exchangers, a maximum of sixty (60) percent opacity is permissible for not more than six (6) consecutive minutes in any sixty (60) consecutive minutes during cleaning the fire box or blowing soot.

Pursuant to 401 KAR 61:015, Section 4 (3)(c), emissions shall not exceed forty (40) percent opacity based on a six-minute average except during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 61:015, Section 5 (1), the sulfur dioxide emissions shall not exceed 5.98 lb/MMBtu based on a twenty-four-hour average.

Compliance Demonstration Method:
Sulfur Dioxide Emission Rate = [38**S** (lb/ton)*] / [coal heating value (MMBtu/ton)]
*Where **S**=% Sulfur in the coal

Pursuant to 401 KAR 50:045, the permittee shall conduct one performance test for particulate matter (PM) before the start of the fourth year of this permit to demonstrate compliance with the applicable standard. The permittee shall submit a schedule within six months from the date of the third year issuance of the final permit V-08-039, to conduct the test. The high and low-pressure levels across the baghouse normal for operation shall be determined during this performance test.

Pursuant to 401 KAR 61:015, Section 6 (6), monitoring of operations for sulfur dioxide emissions shall be conducted by representative (per delivered shipment) sampling and analysis of fuel. Records of the fuel sampling and analysis; and sulfur and heat content shall be maintained for inspection upon request by any duly authorized representative of the Division for Air Quality.

Pursuant to 401 KAR 61:015, Section 6 (3), the rate of fuel combustion shall be recorded at least monthly. The heating value and ash content of fuels shall be ascertained per delivered shipment.

Pursuant to 401 KAR 52:020, Section 26, once per day when the unit is in operation, the permittee shall conduct a visual observation of emissions from the baghouse. If visual emissions are seen, the permittee shall perform an EPA Reference Method 9 test, or document the reason why the test could not be performed in the logbook.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall comply with the opacity monitoring requirements. Excluding the startup and shut down periods, if any six-minute average opacity value exceeds the opacity standard, the permittee shall, as appropriate, initiate an inspection of the control equipment and boiler system and make any repairs. If a Reference Method 9 test cannot be performed, the reason for not performing the test shall be documented.

Pursuant to 401 KAR 52:020, Section 26, the baghouse pressure drop shall be monitored and recorded continuously. Pressure drop on a three-hour average must be maintained within the high operating limit and the low operating limit per CAM submittal to the Division on December 9, 2008. The baghouse shall be equipped with a high and low pressure audible alarm which will sound any time the three hour average exceeds the limits and replace any torn bags promptly, upon inspection, to avoid any loss.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor, record and report fuel usage, sulfur content, and heat content of each delivered shipment and maintain files. Records including those documenting the results of each compliance test, shall be kept pursuant to 401 KAR 52:020, Section 26 and 401 KAR 61:015, Section 6.

Pursuant to 401 KAR 52:020, Section 26, records of the daily visual opacity observations and the Method 9 readings shall be kept in a logbook. The permittee shall record the date, time, and results of the visual observations and Method 9 tests or reason why Method 9 test could not be performed, and shall record any inspections or corrective actions taken due to opacity excursions.

Pursuant to 40 CFR 64, CAM Plan for Emission Units #1, #2, and #4 -PM/PM_{10}

Applicable CAM Requirement	PM/PM_{10} limits
General Requirements	(1) 0.35 lb/MMBtu filterable particulate limit, based on a 3-hour average (2) Less than 40% Opacity except (1) maximum of 60% opacity for not more than 6 consecutive minutes in any consecutive 60 minutes during cleaning the fire-box or blowing soot, and (2) during boiler startup when manufacturer's recommendations are followed.
Monitoring Methods and Location	(1) Differential pressure across the baghouse shall be monitored; proper operation of the baghouse shall be maintained. (2) Daily visual observations of the stack plume shall be performed. USEPA reference Method 9 shall be performed if visual emissions are observed.
Indicator Ranges The permittee may adjust the indicator ranges pursuant to 40 CFR 64.7 (e) based on results from subsequent performance tests for PM compliance and with the Division's approval.	(1) The baghouse has an operating range of 2-8" (w.c.) of pressure drop, in accordance with manufacturer's specifications. An inspection of the baghouse shall be performed if pressure drops occur outside the operating range. Baghouse cleaning will begin at 6" w.c. differential pressure and stop at 2" w.c. differential pressure. (2) The presence of visible emissions during normal boiler operations shall require the permittee to initiate opacity monitoring in accordance with USEPA Reference Method 9. The permissible indicator range for Method 9 readings shall be 0 – 40% opacity under normal operations.
Data Collection Frequency	(1) Baghouse differential pressure is recorded continuously on an ISQL server. (2) Visual observations of the stack plume are performed daily when the boiler is operating. USEPA Reference Method 9 observations (Three six minute readings) are collected and an inspection of the baghouse is performed when visible emissions from the stack are observed.
Averaging Period	(1) Baghouse differential pressure readings records from the ISQL server will be analyzed to show pressure drop as a function of time. Pressure drop values will be marked on a scaled axis if a graph is used. Exceedances and excursions of the operating range will be specifically identified. Analysis of the baghouse differential pressure readings will be included in the semiannual report. (2) Reference method 9 readings, if required, shall be reported as 6-minute averages.
Recordkeeping	(1) Baghouse operating parameters shall be maintained for a period of 5 years. (2) Daily visual observations and Method 9 readings (if any) shall be maintained for a period of 5 years.
QA/QC	(1) An excursion for PM emissions shall be defined as (1) three consecutive baghouse differential pressure readings outside the indicator range listed above in a rolling 24-hour period and (2) one six minute average opacity reading collected using USEPA Reference Method 9 that is above the opacity limit mentioned above. (2) The permittee shall initiate an investigation and take corrective action for each excursion. (3) The Quality Improvement Plan (QIP) threshold for baghouse pressure drop is 5 excursions within a rolling 3-month period. This threshold level is 5 percent (5%) of the total 24-hour data recording periods. The QIP threshold for Method 9 observations is either (1) 4 excursions in a rolling 3-month period or (2) 3 consecutive weekly excursions. (4) If the QIP threshold is triggered in a semiannual reporting period, a QIP shall be developed and implemented. Baghouse monitoring parameters will be maintained and operated in accordance with manufacturer recommendations. Records of Method 9 certifications will be maintained. Differential pressure instrumentation will be calibrated a minimum of once per year. The baghouse will be externally inspected daily and internally inspected at least once per year. Records of all inspections and calibrations will be maintained.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall report the number of excursions (excluding startup, shutdown, and malfunction data) above the opacity standard, date and time of excursions, opacity value of the excursions, and percentage of the opacity data showing excursions above the opacity standard in each calendar quarter.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall report the number of excursions above the sulfur dioxide standard, date of excursions, value of the excursions, and percentage of the sulfur dioxide data showing excursions from emission limitation in each calendar quarter.

Emissions Unit: 06 Natural Gas Indirect Heat Exchangers 1994

Pursuant to 401 KAR 59:015, Section 4, particulate emissions shall not exceed 0.1 lb/MMBtu based on a three-hour-average.

Pursuant to 401 KAR 59:015 Section 4(2) and 401 KAR 60:005, incorporating by reference 40 CFR 60 Subpart Dc, visible emissions from each unit shall not exceed 20 percent opacity based on a six minute average, except for one six minute period per hour of not more than 27 percent opacity

Pursuant to 401 KAR 59:015, Section 4(2)(c), opacity shall not exceed twenty (20) percent based on a six-minute average except during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015, Section 5(1), sulfur dioxide emission shall not exceed 0.8 lb/MMBtu based on a twenty-four-hour average.

Pursuant to 401 KAR 60:005, incorporating by reference 40 CFR 60.43c (d), the PM and Opacity standards apply at all times except during periods of startup, shutdown, or malfunction. Each unit is considered to be in compliance with the PM, SO_2, and opacity standards while burning natural gas.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and record the amount of natural gas combusted on a monthly basis.

Emissions Unit: 07-34 (GB01-GB 28) 28- Natural Gas Indirect Heat Exchangers 1959-1970

Pursuant to 401 KAR 61:015, Section 4, particulate emissions from each boiler stack shall not exceed 0.34 lb/MMBtu based on a three-hour-average.

Pursuant to 401 KAR 61:015, Section 4 (3)(b), emissions shall not exceed forty (40) percent opacity based on a six-minute average except that, for stoker fired indirect heat exchangers, a maximum of sixty (60) percent opacity is permissible for not more than six (6) consecutive minutes in any sixty (60) consecutive minutes during cleaning the fire box or blowing soot.

Pursuant to 401 KAR 61:015, Section 4 (3)(c), emissions shall not exceed forty (40) percent opacity based on a six-minute average except during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 61:015, Section 5(1), sulfur dioxide emission from each boiler stack shall not exceed 2.80 lb/MMBtu based on a twenty-four-hour average.

Each unit is assumed to be in compliance with the PM, SO_2, and opacity standards while burning natural gas.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and record the total estimated amount of gas combusted on site on a monthly basis.

Emissions Unit: 06 Paint Spray Booth 1992

Pursuant to 401 KAR 59:010, Section 3(2), particulate emissions shall not exceed 2.34 lb/hr based on a three-hour-average.

Pursuant to 401 KAR 59:010, Section 3(1), visible emissions shall not equal or exceed twenty (20) percent opacity.

Pursuant to 401 KAR 52:020, Section 26, the permittee shall monitor and record the amount of each coating and hour of operation on a monthly basis.

Compliance Demonstration Method

This unit is deemed to be in compliance if the maximum operating rate of 0.5gal/hr is not exceeded and the booths are operated in accordance with procedure provided by the manufacturer.

EMISSION AND OPERATING CAPS DESCRIPTION:

To preclude applicability of Section 112(j) of the Clean Air Act source-wide emissions of a single hazardous air pollutant (HAP), shall not exceed 9.0 tons in any consecutive twelve-month period and source-wide emissions of total HAPs shall not exceed 22.5 tons in any consecutive twelve-month period. Also source-wide consumption of coal shall not exceed 15,000 tons per year on a twelve-month rolling total.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.